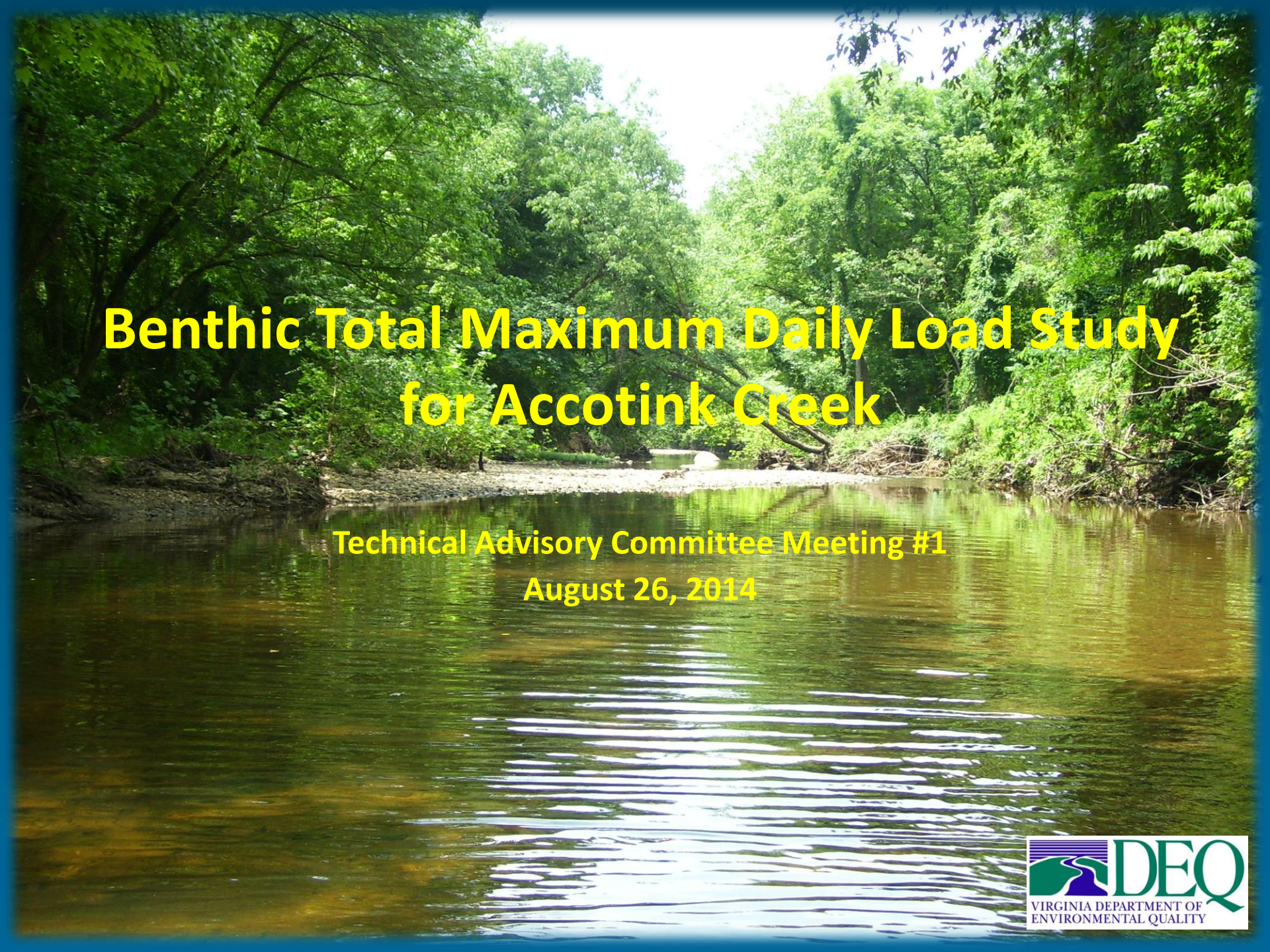


Benthic Total Maximum Daily Load Study for Accotink Creek

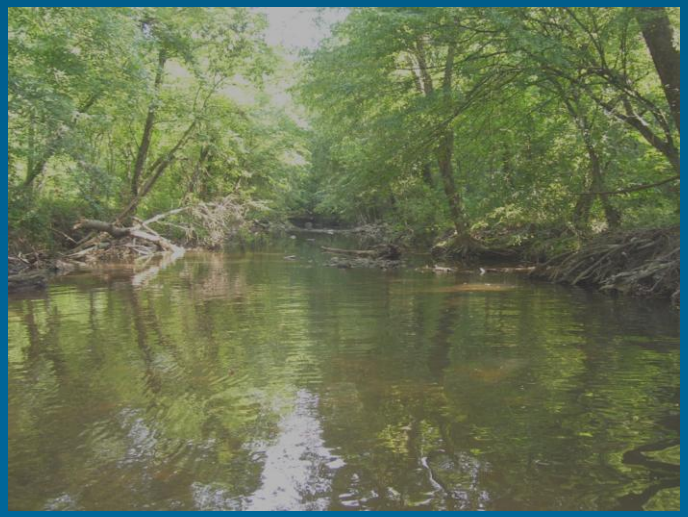
Technical Advisory Committee Meeting #1

August 26, 2014

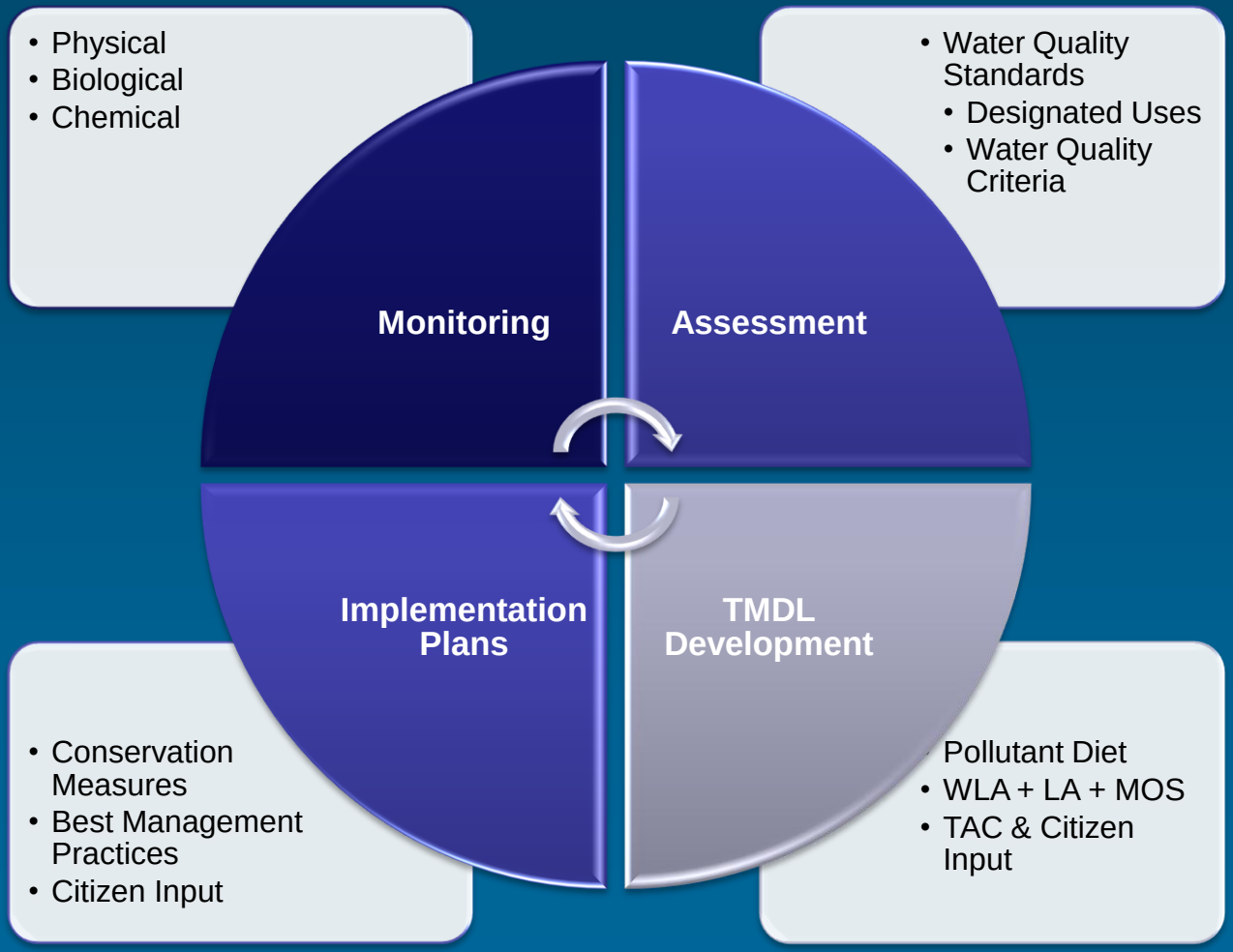
DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Meeting Agenda

1. Introductions
2. Overview of TMDL Process
3. Accotink Creek Project History
4. Accotink Creek Watershed Impairment Information
5. Project Plan and Timelines
6. Stressor Analysis Overview
7. Data Inventory
8. Questions & Discussion



TMDL Development Process



Who is involved in this process?

DEQ :	**Lead Agency for TMDL Development**
Contractor:	**Performs modeling for TMDL Development, for this project, contractor is the Interstate Commission on the Potomac River Basin**
TAC:	**Representatives from state and local governments, watershed groups, planning district commission, soil and water conservation districts, etc. Provides technical input and information for TMDL development**
Citizens:	**Any citizen who wishes to participate in the project; provide local knowledge and information**

Technical Advisory Committee

- **Is a public body – announced meetings and open to the public**
- **Members are determined by DEQ**
- **Meeting announcement posted on VA Town Hall at least 3 days in advance of the meeting date and on DEQ website**
- **Minutes of the advisory group meeting shall be posted on VA Town Hall within 10 workdays and include:**
  - **Meeting location information**
  - **Members of the group present & absent**
  - **Summary of topics discussed & decisions made (if any)**

Project History

2007

- Spring/Summer - Initial project kickoff (along with Difficult Run)
- December - Revised schedule for Accotink Benthic project (separation from Difficult Run projects)

2008

- December - TAC Meeting #1

2009

- May - EPA takes over TMDL development
- August - TAC Meeting #2
- September 2009 - First Public Meeting

2010

- January - TAC Meeting #3
- July - Final Public Meeting and Release of Draft TMDL Report for Public Comment

2011

- April - Accotink Flow TMDL Report established by EPA

2012

- July - Lawsuit challenging the Flow TMDL filed

2013

- January - U.S. District Court for the Eastern District of Virginia ruled in favor of the Plaintiffs & remanded the TMDL to EPA for reconsideration
- July - Virginia commits to establishing a TMDL replacement for Accotink Creek by 2016

Project Today

2014

- **August - TAC project kickoff meeting**

Streams in the Accotink Creek watershed are listed as not supporting the Aquatic Life Use

Designated Uses

- Recreational
- Public Water Supply
- Wildlife
- Fish Consumption
- Shellfish
- Aquatic Life

The attainment of the aquatic life use is evaluated by testing for the health of the benthic macroinvertebrate community, as well as for parameters such as DO and pH.

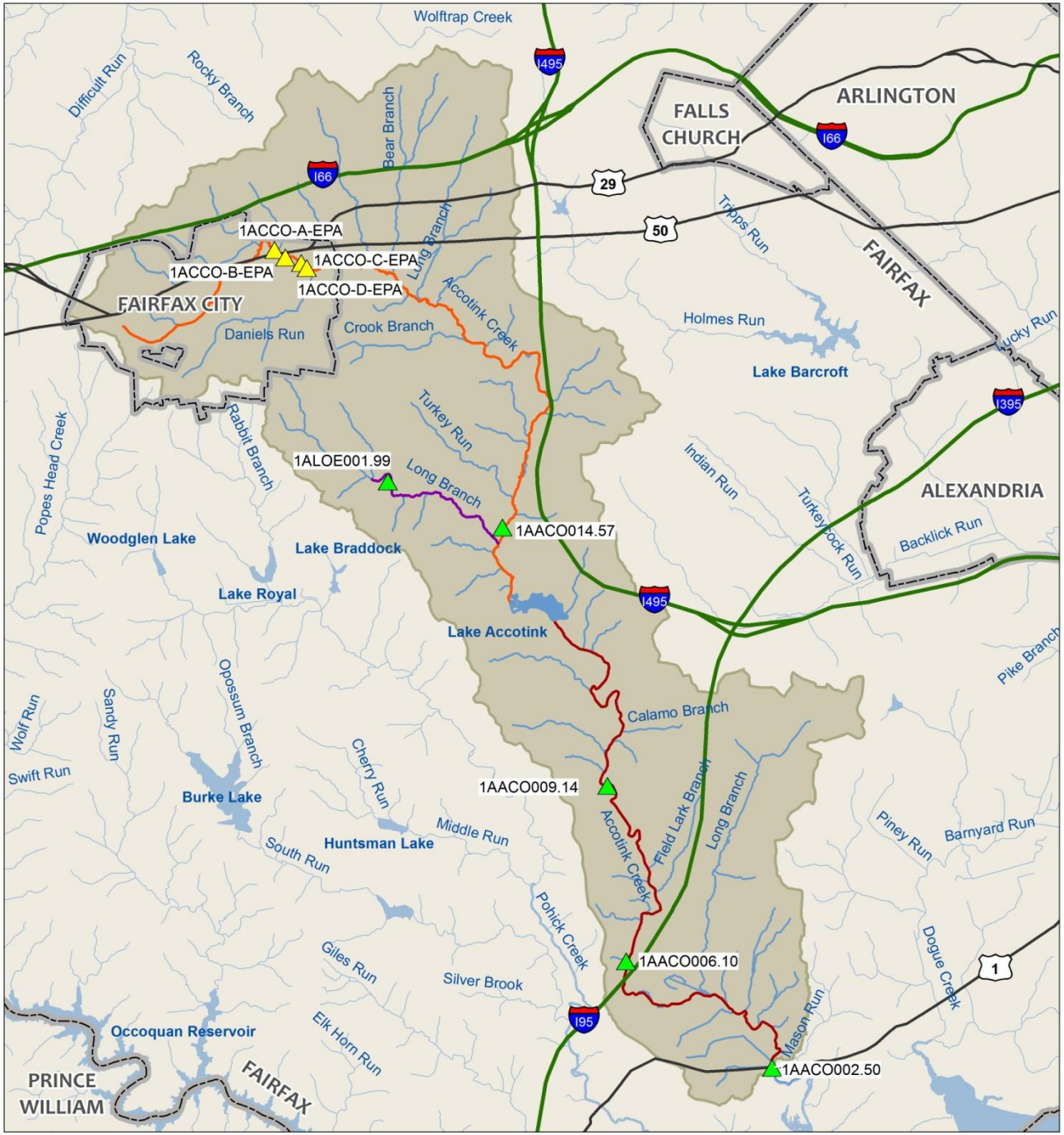
Aquatic Life Use: What are benthic macroinvertebrates?

Aquatic invertebrates that live on the bottom of streams, rivers, and other bodies of water.

Pollution Intolerant Invertebrates

Moderately Pollution Tolerant Invertebrates

Highly Pollution Tolerant Invertebrates



Legend

Biological Monitoring Stations

- DEQ
- EPA
- Streams

303d Listed Segments

- A15R-01-BEN
- A15R-04-BEN
- A15-R-05-BEN

Major Roads

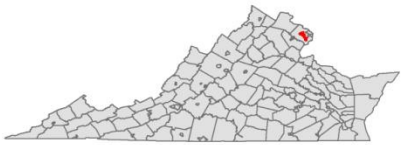
- Interstate
- US Hwy
- Jurisdictional Boundaries
- Waterbodies
- Accotink Watershed

Data Sources:
VADEQ – Watersheds, Impaired Segments, Monitoring Stations
USGS – National Hydrography Dataset
ESRI – Roads
US Census – Jurisdictinal Boundaries

N
W E
S

0 0.5 1 2 3 4
Miles

MAP INDEX



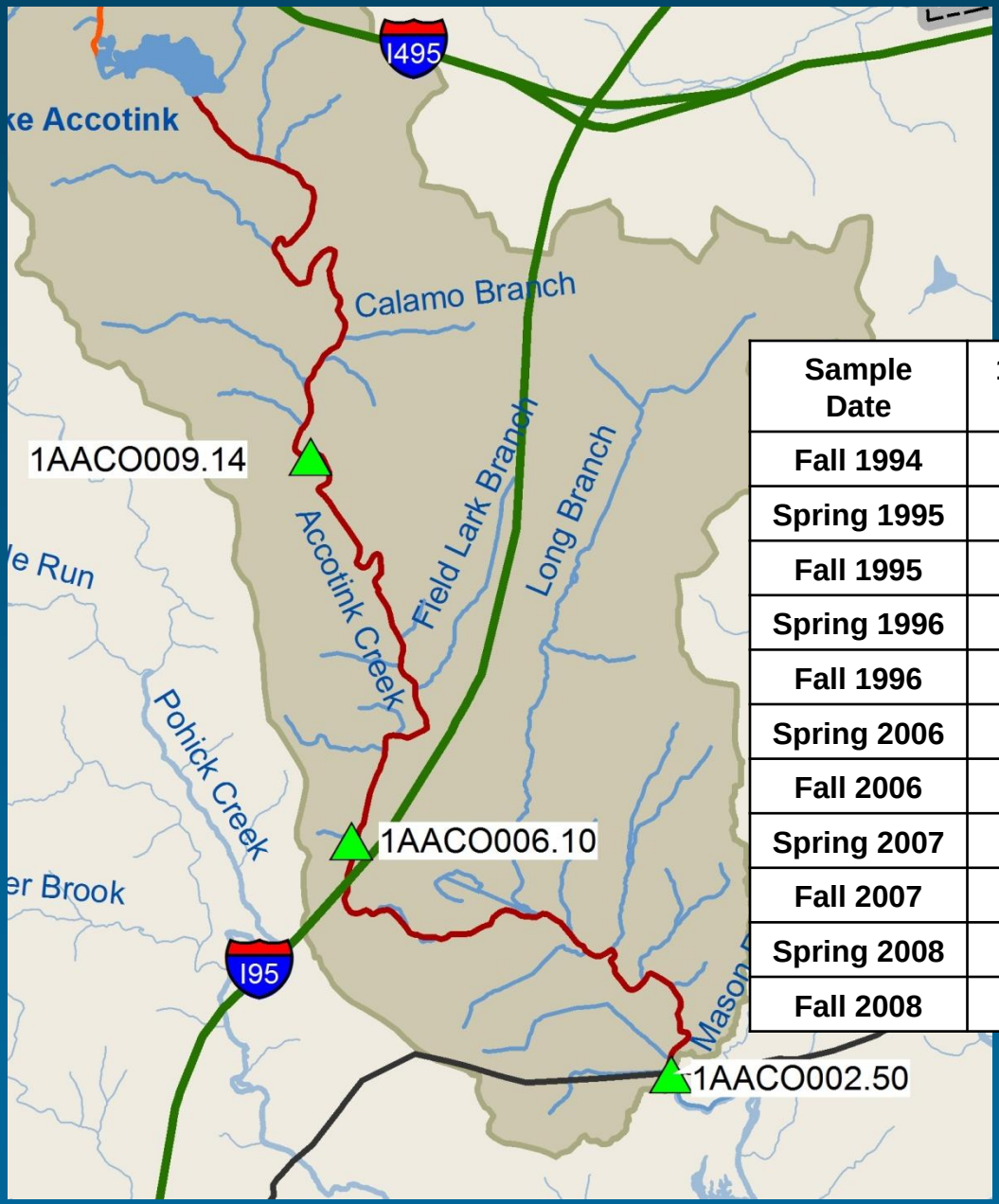
Aquatic Life Use Impairments in Accotink Creek Watershed

Stream Name	Impairment Cause	Impairment Length	Year Impairment First Listed	Upstream Limit	Downstream Limit
Accotink Creek	Benthic Macroinvertebrates	9.92 miles	1996	Outlet of Lake Accotink	Start of the tidal waters of Accotink Bay
Accotink Creek	Benthic Macroinvertebrates	11.17 miles	2008	Headwaters of Accotink Creek	Start of Lake Accotink
Long Branch	Benthic Macroinvertebrates	2.24	2008	Confluence with an unnamed tributary to Long Branch, at the Route 651 (Guinea Road) bridge	Confluence with Accotink Creek

* Impairment information from the 2012 Integrated Report

VA DEQ Biological Monitoring

Stream Condition Index (SCI Scores) for Accotink Creek



Sample Date	1AACO002.50 (Route 1)	1AACO006.10 (Route 790)	1AACO009.14 (Hooes Road)
Fall 1994		38.3	
Spring 1995		38.9	
Fall 1995		30.6	
Spring 1996		38.2	
Fall 1996		28.3	
Spring 2006	35.3	24.3	
Fall 2006	26.6	41.9	
Spring 2007	33.5	36.6	
Fall 2007	28.3	29.7	
Spring 2008		25.7	22.8
Fall 2008		35.9	30.7

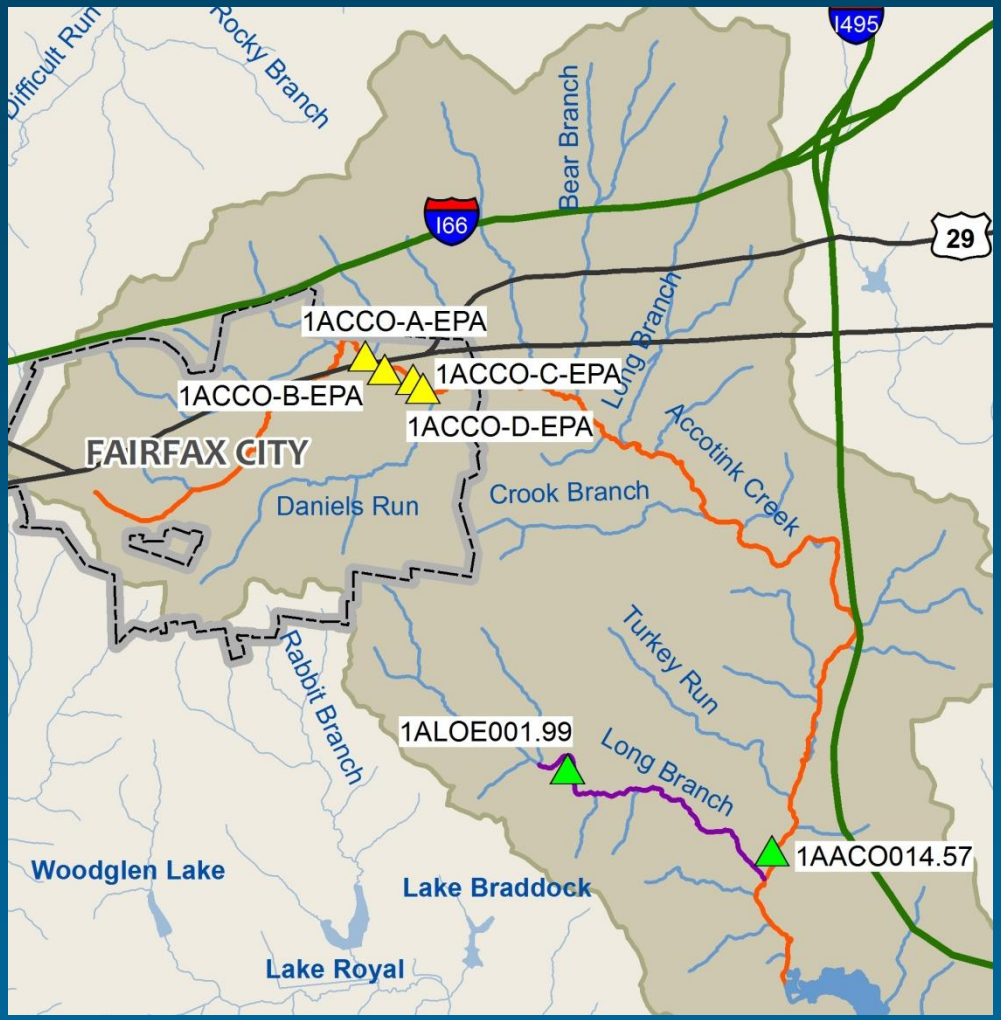
VSCI Score Threshold = 60

VA DEQ Biological Monitoring

Stream Condition Index (SCI Scores) for Accotink Creek and Long Branch

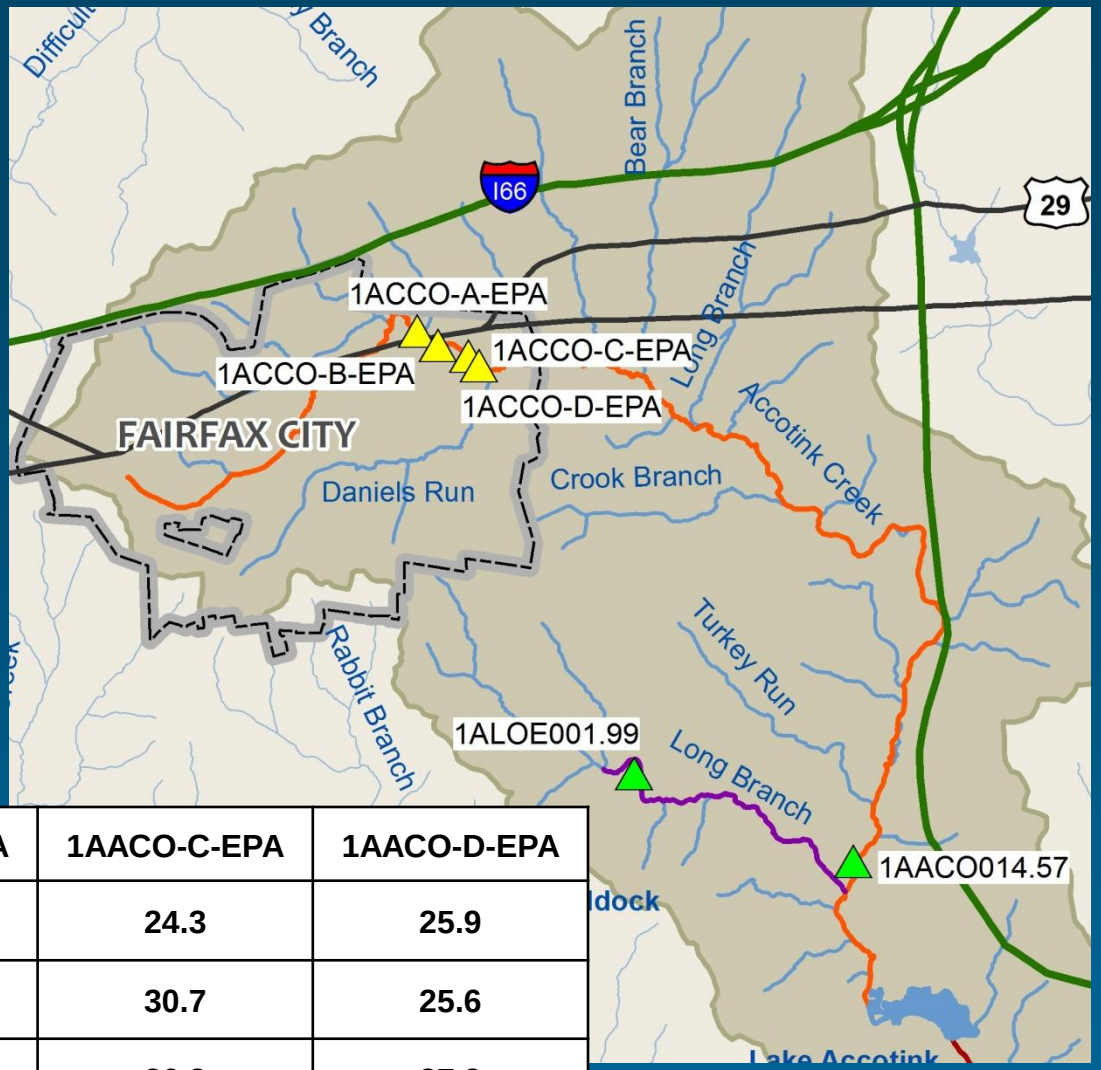
Sample Date	1AACO014.57 (Route 620)	1AALOE001.99 (Route 651)
Spring 2006		29.5
Fall 2006		24.5
Spring 2007	31.6	
Fall 2007	30.9	

VSCI Score Threshold = 60



US EPA Biological Monitoring

Stream Condition Index (SCI Scores) for Accotink Creek



Sample Date	1AACO-A-EPA	1AACO-B-EPA	1AACO-C-EPA	1AACO-D-EPA
November 2005	21.2	29.1	24.3	25.9
December 2005	21.5	25.1	30.7	25.6
March 2006	25.2	23.9	26.3	27.2

VSCI Score Threshold = 60

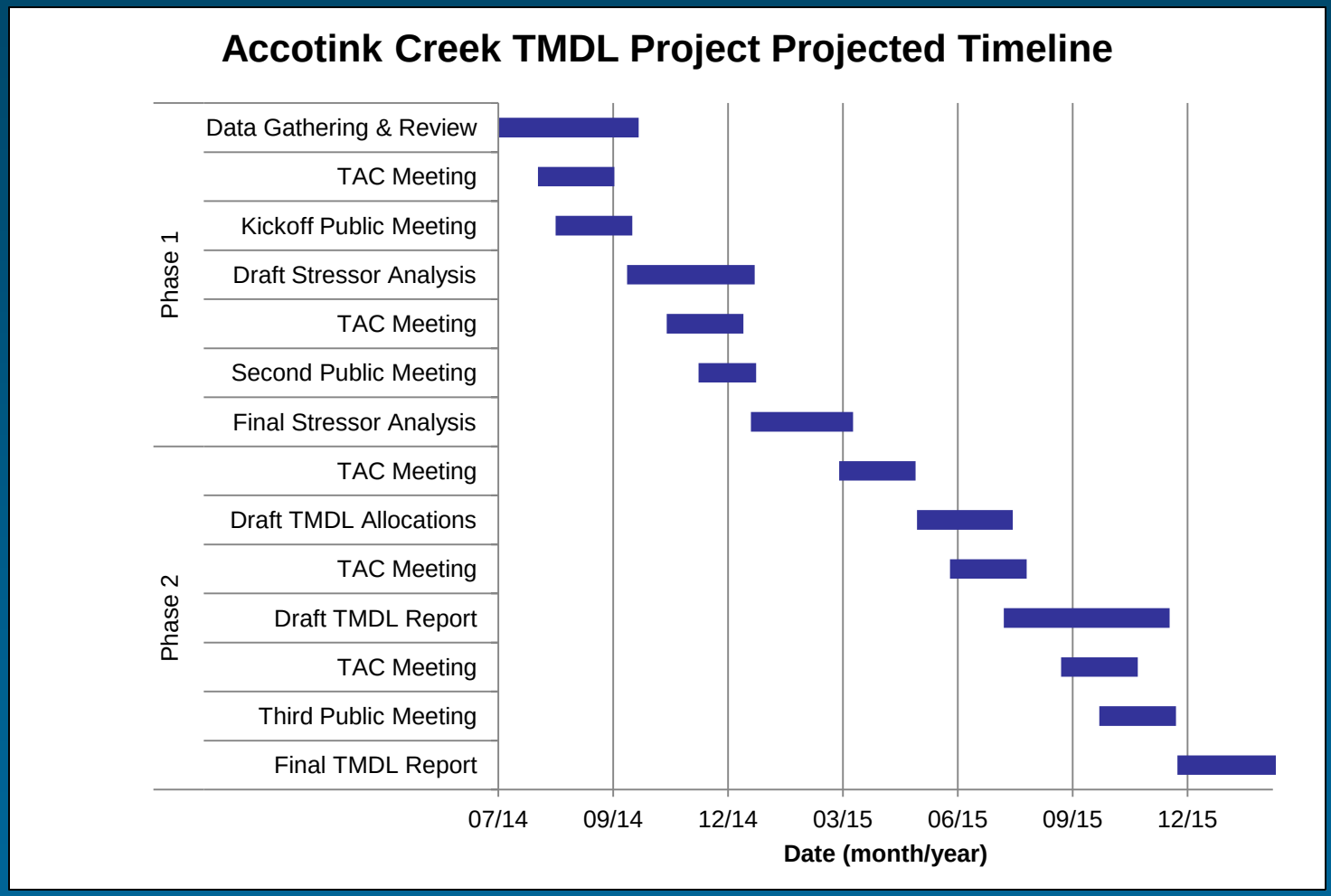
Accotink Project Plan

Phase 1: Stressor Analysis & Watershed Characterization

Target completion date February 2015

Phase 2: TMDL development

Target completion date February 2016



What is a Stressor Analysis?

Answers the question: ***What pollutant is causing the aquatic life impairment?***

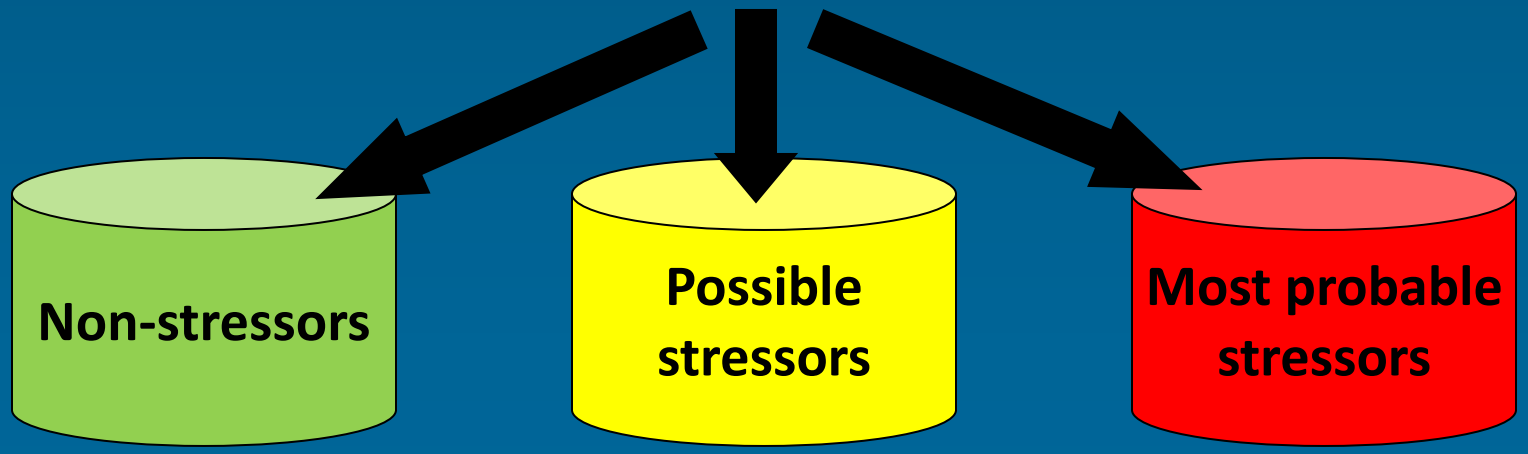
1. List all potential causes, for example:

   DO, nutrients, pH, sediment, temperature, toxics, etc.

2. Analyze the evidence for and against each pollutant:

   Biological, habitat, water quality, historic data, etc.

3. Categorize each of the causes as being one of the following:



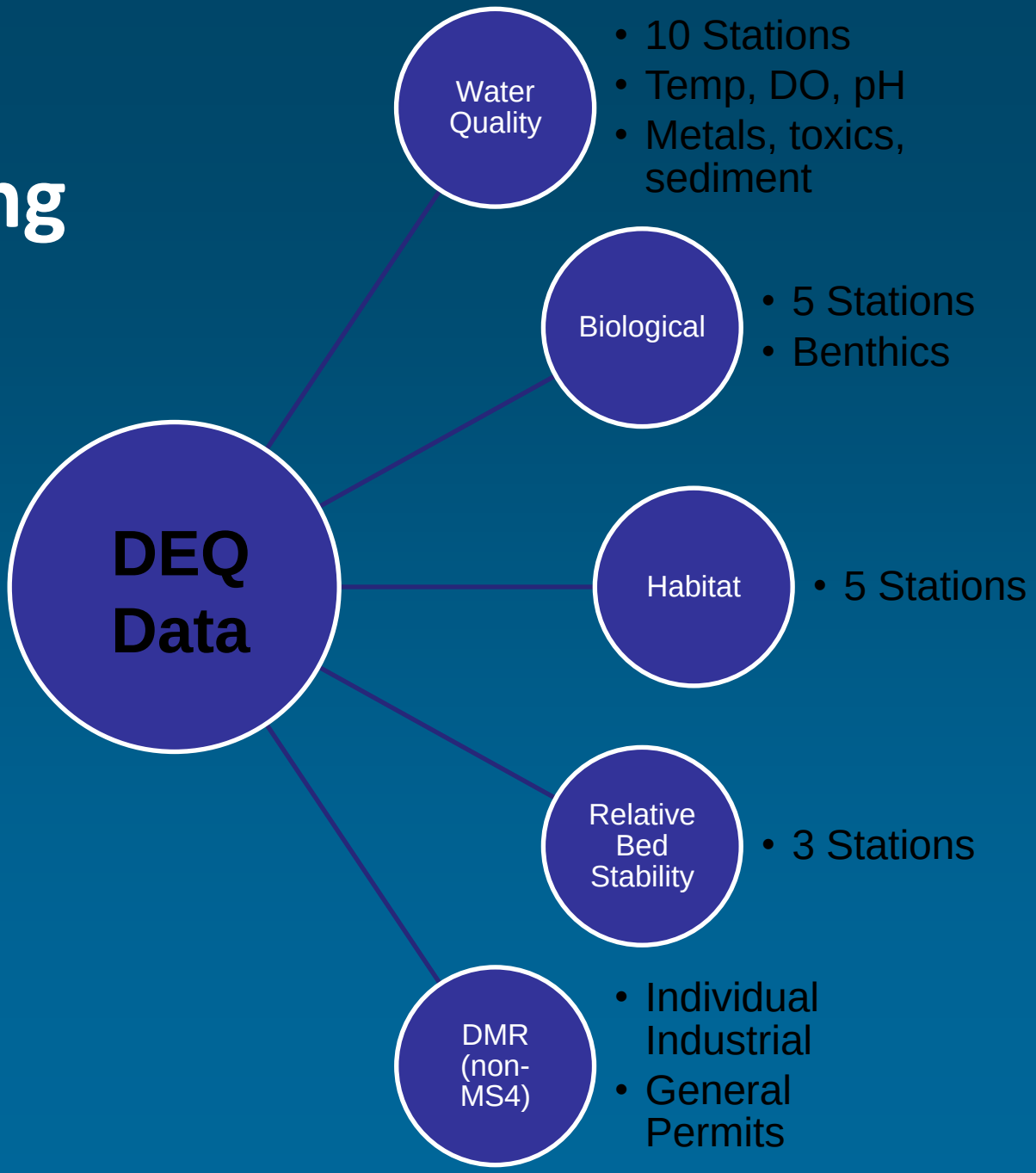
Potential Stressors

- Temperature
- pH
- DO
- Total Dissolved Solids
- Chlorides
- Conductivity
- Nutrients
- Metals
- Toxics
- Sediment
- Hydro-modification

VA Water Quality Standards

Constituent	Numerical Criteria
DO	>4 mg/l (instantaneous); >5 mg/l (daily average)
Temperature	< 32°C
pH	>6 and <9
Chloride	860 mg/l (acute); 230 mg/l (chronic)
Metals	Various; in many cases applies to dissolved metals as a function of hardness
Ammonia	Function of pH (acute) or pH and temperature (chronic)

Data Gathering



Data Gathering

Additional Data Sources

Fairfax County

- Water Chemistry
- Benthic Data
- Fish Data
- GIS Data

USGS

- 3 Active Gage Stations
- Storm Event Samples

EPA

- 4 Monitoring Sites
- Restoration Study

Data Gathering

Accotink Creek Watershed Permit Holders

- MS4
  - George Mason University
  - Ft. Belvoir
  - Northern Virginia Community College
  - City of Fairfax
  - Fairfax County Public Schools
  - Town of Vienna
  - Fairfax County
  - Virginia Department of Transportation (VDOT)

- Individual VPDES
  - Joint Basin Corporation - Fairfax Terminal Complex
  - Kinder Morgan Southeast Terminals LLC – Newington
  - Kinder Morgan Southeast Terminals LLC-Newington 2
  - Motiva Enterprises LLC - Fairfax

Data Gathering

Accotink Creek Watershed Permit Holders

- General Permits
  - Car Wash
    - Enterprise Rent A Car - Backlick Rd
    - Enterprise Rent A Car - Nutley St
  - Cooling Water
    - AT&T Oakton Office Park
  - Mixed Concrete
    - Virginia Concrete Company Inc - Newington Plant 1
    - VA Concrete Co - Mid Atlantic Materials-Newington
  - Domestic
    - One residence

Data Gathering

Accotink Creek Watershed Permit Holders

- General Permits
  - Industrial Stormwater
    - SICPA Securink Corporation
    - Fairfax County - Connector Bus Yard (Huntington Garage)
    - US Postal Service - Merrifield Vehicle Maintenance
    - US Army - Fort Belvoir - Building 1442
    - Rolling Frito Lay Sales LP - South Potomac DC
    - National Asphalt Paving Corporation – Fairfax
    - Fairfax County - Jermantown Maintenance Facility
    - Fairfax County - Newington Maintenance Facility
    - Fairfax County - DVS - Alban Maintenance Facility
    - HD Supply - White Cap
    - United Parcel Service – Newington
    - Milestone Metals
    - Newington Solid Waste Vehicle Facility

Data Requirements for Stressor Identification Analysis

Stressor	Data Useful to Evaluate Stressor
Sediment	Water quality monitoring Habitat assessment Relative bed stability study Stream channel cross sections Sediment grain-size Other geomorphological data
pH Conductivity Chlorides Ammonia Total Dissolved Solids	Ambient water quality monitoring
DO Temperature Nutrients	Ambient water quality monitoring Continuous water quality monitoring
Metals and organic contaminants	Organic Contaminant Data Fish tissue samples Sediment samples Toxicity tests on minnows and/or water fleas

Data Requirements for Watershed Characterization

Feature	Useful GIS Data
Soils	Soil layer at SSURGO level
Land use	Zoning layer (parcels)
Impervious Area	Building footprints Roads Sidewalks Parking lots
Waste disposal	Sewer lines Septic systems
Watersheds and Subwatersheds	Watershed Boundaries

What next?

- Share data (anything you may for us to consider) – by September 30th

- Introduction of the project to the public

  First Public Meeting
  Wednesday, September 10, 2014 6:00 pm
  Kings Park Library - Meeting Room
  9000 Burke Lake Road, Burke, VA 22015-1683
  703-978-5600

Questions? Comments?

CONTACTS

Jennifer Carlson
Northern Regional Office
Virginia Department of Environmental Quality
Phone: 703-583-3859
Email: jennifer.carlson@deq.virginia.gov

Bryant Thomas
Northern Regional Office
Virginia Department of Environmental Quality
Phone: 703-583-3843
Email: bryant.thomas@deq.virginia.gov

Ross Mandel
Interstate Commission for the Potomac River Basin
Phone: 301-984-1908 x118
Email: rmandel@icprb.org